herewith is a copy of pertinent pages from a brochure describing glass cutting products offered by The Fletcher-Terry Company. These pages describe the mechanism by which glass is "cut".

The present application, in contrast, claims a hand-held rotary *cutter for cutting* thin sheet materials (e.g., paper, cloth, plastic).[1] The claimed geometry of the circular cutting blade makes it a proficient tool for cutting thin sheet materials. The ease of use and quality of cut provided by the present rotary cutter are directly related to the claimed geometry of the cutting blade (i.e., the edge angle of the cutting blade and the diameter to thickness ratio).

Nonanalogous Art:

Applicants respectfully submit that the Roberts reference, and glass "cutters" like that disclosed within Roberts, are nonanalogous art relative to the claimed rotary *cutter for cutting* thin sheet materials. As described above, glass cutters like that disclosed within Roberts do not "cut" glass, but rather create a fault along which the glass substrate can predictably be fractured. The present rotary cutter, on the other hand is a device for cutting thin sheet materials. Hence, the two devices operate in fundamentally different ways. For at least that reason, applicants respectfully submit that the Roberts reference is nonanalogous and therefore not a reference that can be used to establish a prima facie case of obviousness.

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[1] Independent claim 1 (and dependent claims 2-12) of the present application claims a hand-held rotary cutter for cutting thin sheet materials that includes: (a) a handle having a hand grip portion; and (b) a circular cutting blade having a cutting edge, a diameter, and a thickness, wherein the cutting blade is pivotally mounted to the handle, and wherein the diameter of the cutting blade is not greater than fifteen times the thickness.

Independent claim 13 (and dependent claims 14-17) claim a hand-held rotary cutter for cutting thin sheet materials that includes: (a) a handle having a hand grip portion; and (b) a replaceable cutting blade and clip assembly, wherein the cutting blade includes a diameter and a thickness and the diameter is not greater than fifteen times the thickness; and the cutting blade is rotatably mounted on the clip; and wherein the cutting blade and clip assembly is attached to the handle and can be selectively replaced.

Independent claim 18 (and dependent claim 19) claims a hand-held rotary cutter for cutting thin paper products that includes: (a) a handle having a hand grip portion; and (b) a circular cutting blade having a cutting edge, a diameter, and a thickness, wherein the cutting blade is pivotally mounted to the handle; and wherein the diameter of the cutting blade is not greater than fifteen times the thickness.

Independent claim 20 (and dependent claims 21-24) claims a rotary cutter for cutting thin sheet materials that includes: (a) a support member; and (b) a circular cutting blade having a cutting edge, a diameter, and a thickness, wherein the cutting blade is pivotally mounted to the support member; and wherein the diameter of the cutting blade is not greater than fifteen times the thickness.

35 U.S.C. §102(b) Rejection:

Applicants respectfully submit that the classic test for anticipation, under 35 U.S.C. §102, requires that every limitation in a claim must be present in a single source reference for that reference to "anticipate" the claimed invention. In this case, Roberts does not disclose any attributes of either cutting wheel 19,27. Hence, Roberts does not anticipate the claimed invention. Accordingly, applicants respectfully request the Examiner withdrawn this rejection and allow claims 1-24.

35 U.S.C. §103(b) Rejection:

When an application is submitted to the Patent and Trademark Office, statute and case law dictate that the burden of proof is on the PTO to establish a prima facie case of obviousness. Once the prima facie case has been established, then the burden of going forward with the evidence to rebut the prima facie case shifts to the applicant. Only the burden of going forward with evidence to rebut shifts to the applicant, however. The burden of persuasion remains with the PTO.

In this instance, a prima facie case would necessarily have to first establish that the teachings of Roberts render the claimed subject matter obvious. In the present rejection, the Examiner indicates that "[t]he reference appears to show the claimed details of the blade such as a diameter to width ratio of less than 10 and an edge angle of approximately 45 degrees. If the article is not approximately 45 degrees however it would appear to be an obvious matter for an artisan to specify such an angle which would create no new or unobvious results." The Examiner does not provide any support for within Roberts, however, for his statement. Rather, it appears to be either based on opinion or is the product of impermissible hindsight.

Applicants respectfully submit that the differences between the claimed device and glass cutting devices such as that disclosed by Roberts are significant. First, applicants respectfully direct the Examiner to the remarks above describing the functional differences between the two types of devices. Second, applicants further submit that glass cutting devices such as that disclosed by Roberts do not use a cutting wheel having an edge angle between 40 and 50 degrees and/or one that has a diameter not greater than fifteen times its thickness. Applicants submit herewith a Declaration from Mr. Vincent Kozyrski, an employee of The Fletcher-Terry Company. The Fletcher-Terry Company, assignee of the

present patent application, has been in the business of manufacturing glass cutting devices since 1868. In the Declaration, Mr. Kozyrski states that glass cutting devices that utilize a bevel edge cutting wheel such as that disclosed by Roberts typically have an edge angle of approximately one hundred and twenty degrees (120°). The Fletcher-Terry Company does now manufacture, or has manufactured, bevel-edge cutting wheels having an edge angle in the range of not less than eighty-eight degrees (88°) to not more than one hundred and sixty-five degrees (165°). Enclosed herewith is a copy of pertinent pages from the above-identified brochure describing glass cutting products offered by The Fletcher-Terry Company. The pertinent pages contain a "Wheel Specification Guide" that includes the edge angles of the wheels offered (between 94° and 160°). Mr. Kozyrski has been an employee of The Fletcher-Terry Company for twenty-nine (29) years and is not aware of any bevel-edge glass cutting wheels outside the aforesaid range of between 88° and 165°. In short, applicants respectfully traverse the Examiner's conclusion that the presently claimed invention is obvious in view of Roberts. Accordingly, applicants respectfully request the Examiner withdraw this rejection and allow claims 1-24.

As applicants have traversed each rejection raised by the Examiner, it is respectfully requested that the Examiner withdraw the stated rejections, allow claims 1-24, and pass the present application on to issuance. Applicants enclose herewith a fee in the amount of $138.00 to cover the addition of new claims 25-27. In the event a fee in excess of the amount provided for in the accompanying check is due, please charge our Deposit Order Account No. 13-0235.

Respectfully submitted,

By Richard D. Getz

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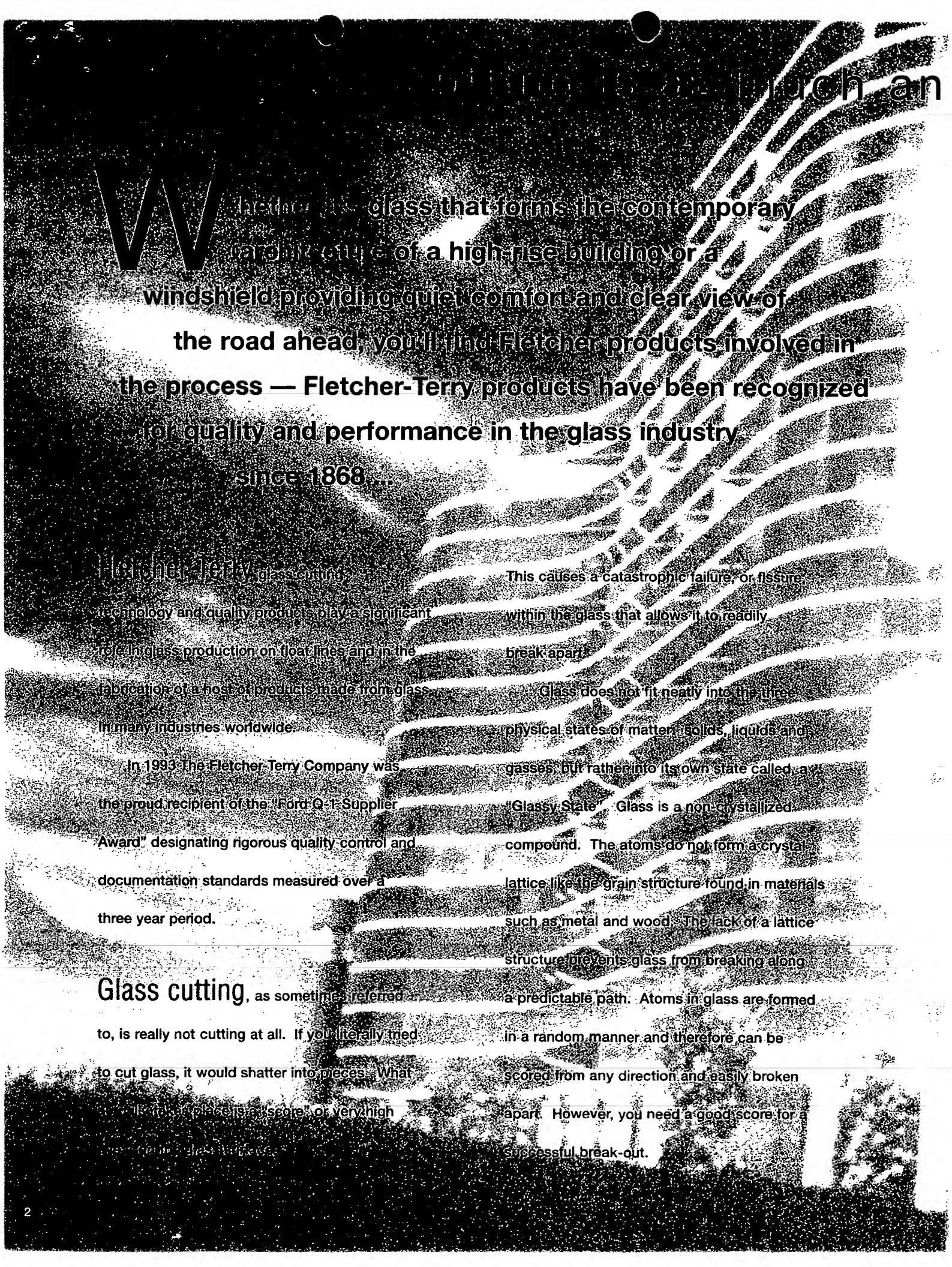
glass cutting...

products

FLETCHER

The Fletcher-Terry Company



Whether it's glass that forms the contemporary architecture of a high-rise building or a windshield providing quiet comfort and clear view of the road ahead, you'll find Fletcher products involved in the process — Fletcher-Terry products have been recognized for quality and performance in the glass industry since 1868...

Fletcher-Terry glass cutting technology and quality products play a significant role in glass production on float lines and in the fabrication of a host of products made from glass in many industries worldwide.

In 1993 The Fletcher-Terry Company was the proud recipient of the "Ford Q-1 Supplier Award" designating rigorous quality control and documentation standards measured over a three year period.

Glass cutting, as sometimes referred to, is really not cutting at all. If you literally tried to cut glass, it would shatter into pieces. What takes place is a "score" or very high [illegible] glass surface.

This causes a catastrophic failure, or fissure, within the glass that allows it to readily break apart.

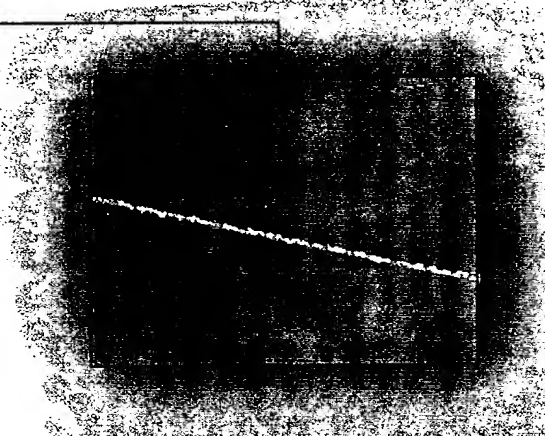
Glass does not fit neatly into the three physical states of matter, solids, liquids and gasses, but rather into its own state called a "Glassy State". Glass is a non-crystallized compound. The atoms do not form a crystal lattice like the grain structure found in materials such as metal and wood. The lack of a lattice structure prevents glass from breaking along a predictable path. Atoms in glass are formed in a random manner and therefore can be scored from any direction and easily broken apart. However, you need a good score for a successful break-out.

art as it is a science

Optimum score is a function of four variables: cutting wheel diameter, wheel angle, cutting speed and force. All four variables in just the right ratio will yield the optimum score. These variables are described in the wheel section on page thirteen.

Cutting fluid also improves score quality. It reduces flaking and improves break-out and edge quality. The reason cutting fluid improves score quality is that it creates a hydraulic coupling between the wheel and the glass surface. When a wheel is rolling in fluid it transmits force more evenly to the glass. This results in a score line with less flaking and a uniform fissure driven into the glass. When the fissure begins to close again this is referred to as the healing process. As cutting fluid seeps into the fissure this delays healing and improves break-out.

Cutting fluid that is oil based also lubricates the axle that the wheel rolls on, reducing friction. Friction ultimately causes axle/wheel deformation, resulting in failure.

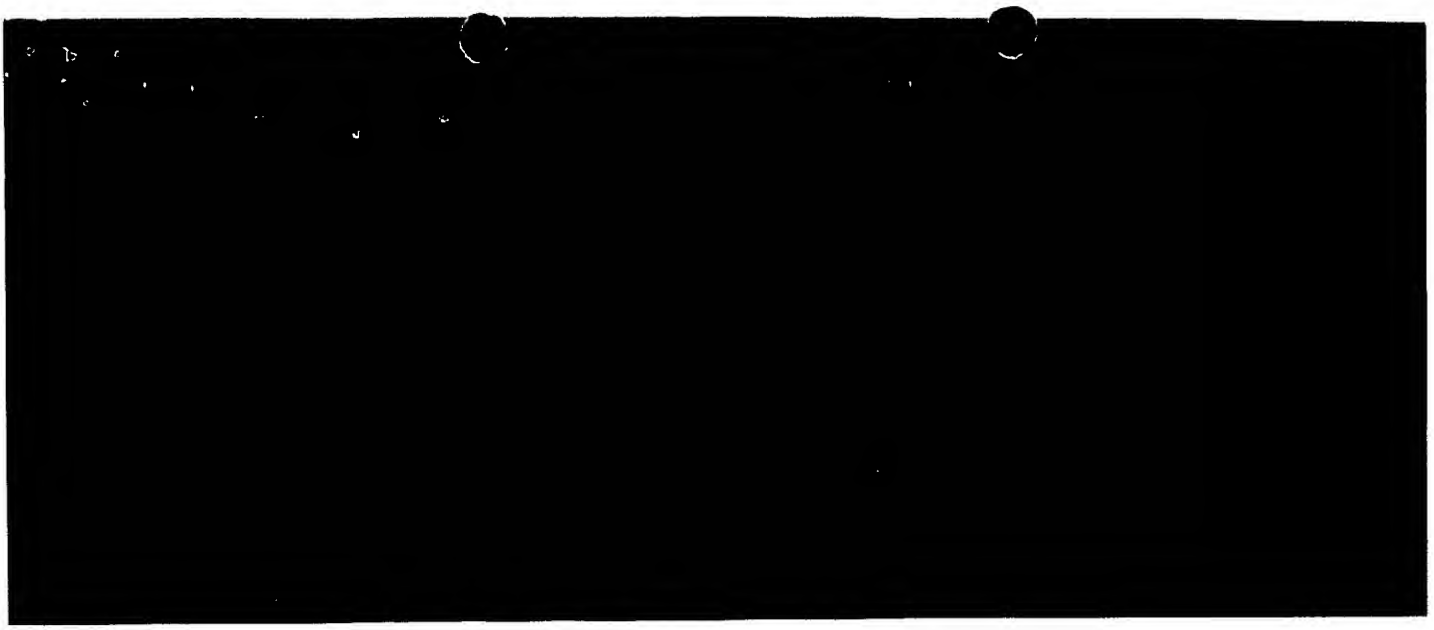


Break-out becomes relatively easy once we have created the optimum score. The score must then be put in tension to successfully break the glass apart. The more common methods of break-out are mechanical, hot air and flame.

Mechanical break-out utilizes some type of tool to physically bend the glass and run the score. Running the score is a term that describes what happens when the score line is put in tension. The fissure separates at that point and the glass vents along the score line. Minimum flex will then snap the glass apart.

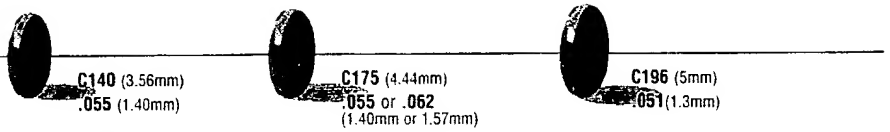
Edge quality can be inspected once the glass is separated. The hackle marks should be approximately ten percent of the glass thickness. They can be slightly more or less but most importantly they should be uniform.

Large hackles or waves in the edge can be caused by several factors. Contamination on the glass surface may cause the wheel to slip, resulting in an interrupted fissure. A worn out wheel used with excessive pressure may cause

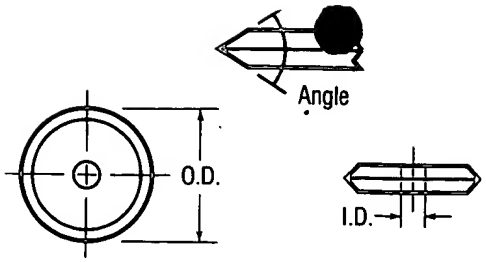


Glass Thickness

Wheel Specification Guide



Glass Thickness	C140 (3.56mm)	C175 (4.44mm)	C196 (5mm)
Microslide 04"/1mm - **Photo** .06"/1.5mm Wheel Outside Diameter Wheel Inside Diameter	**.055** (1.40mm)	**.055** or **.062** (1.40mm or 1.57mm)	**.051** (1.3mm)
Wheel Width	**.042** (1.06mm)	**.042** (1.06mm)	**.039** (1mm)
Angle	**128°**	**124°**	**120°**
Picture .08"/2mm - **Single** - .09"/2.5mm			
	C140 (3.56mm)	**C175** (4.44mm)	**C196** (5mm)
	.055 (1.40mm)	**.055** or **.062** (1.40mm or 1.57mm)	**.051** (1.3mm)
	.042 (1.06mm)	**.042** (1.06mm)	**.039** (1mm)
	134°	**128°**	**124°**
Double .12"/3mm - **5/32 in.** .16"/4mm - **3/16 in.** .19"/5mm			
	C140 (3.56mm)	**C175** (4.44mm)	**C196** (5mm)
	.055 (1.40mm)	**.055** or **.062** (1.40mm or 1.57mm)	**.051** (1.3mm)
	.042 (1.06mm)	**.042** (1.06mm)	**.039** (1mm)
	145°	**140°**	**134°**
1/4" in. .23"/6mm - **5/16 in.** .32"/8mm			
	C140 (3.56mm)	**C175** (4.44mm)	**C196** (5mm)
	.055 (1.40mm)	**.055** or **.062** (1.40mm or 1.57mm)	**.051** (1.3mm)
	.042 (1.06mm)	**.042** (1.06mm)	**.039** (1mm)
	154°	**152°**	**145°**
3/8 in. .39"/10mm - **1/2 in.** .49"/12mm			
	C140 (3.56mm)	**C175** (4.44mm)	**C196** (5mm)
	.055 (1.40mm)	**.055** or **.062** (1.40mm or 1.57mm)	**.051** (1.3mm)
	.042 (1.06mm)	**.042** (1.06mm)	**.039** (1mm)
	160°	**154°**	**152°**
5/8 in. .63"/16mm - **3/4 in.** .75"/19mm			
		C175 (4.44mm)	**C196** (5mm)
		.055 or **.062** (1.40mm or 1.57mm)	**.051** (1.3mm)
		.042 (1.06mm)	**.039** (1mm)
		160°	**154°**
7/8 in. .87"/22mm - **1 in.** 1.00"/25mm			
			C196 (5mm)
			.051 (1.3mm)
			.039 (1mm)
			160°
1 1/4 in. 1.24"/32mm			



ORDER AS FOLLOWS:

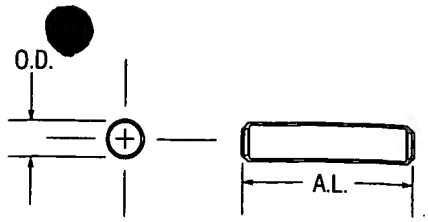
O.D. — I.D. — Angle — Finish

- Wheel Outside Diameter
- Wheel Inside Diameter
- (RG), (PL), (CR) Wheel Angle

Example: C245–055–134–RG

Tungsten Carbide Wheels

Fletcher-Terry tungsten carbide wheels can be specified with cutting angles from 88° to 165° in increments of 1°. To order use the cutting wheel outside and inside diameters, angles and finish as outlined in the chart below.



ORDER AS FOLLOWS:

ACI — O.D. — A.L.

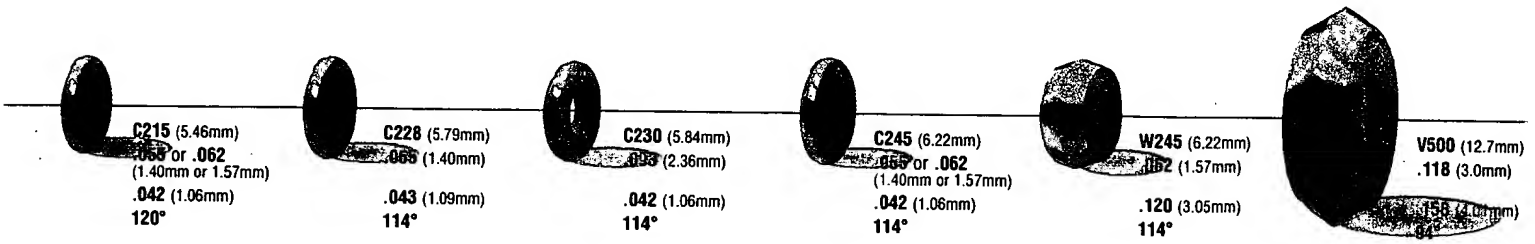
- Axle Length
- Axle Outside Diameter
- Axle Carbide

Example: ACI–054–180

Tungsten Carbide Axles

Fletcher-Terry precision ground tungsten carbide axles are available in outside diameters of .054" (1.37mm) and .062" (1.57mm) in six different lengths: .118" (2.99mm), .180" (4.57mm), .201" (5.10mm), .250" (6.35mm), .265" (6.73mm) and .335" (9.39mm).

Customers requiring axles of special lengths or outside diameters should contact their Fletcher-Terry Sales & Service Technician.



C215 (5.46mm)	C228 (5.79mm)	C230 (5.84mm)	C245 (6.22mm)	W245 (6.22mm)	V500 (12.7mm)
.055 or .062 (1.40mm or 1.57mm)	.055 (1.40mm)	.093 (2.36mm)	.055 or .062 (1.40mm or 1.57mm)	.062 (1.57mm)	.118 (3.0mm)
.042 (1.06mm)	.043 (1.09mm)	.042 (1.06mm)	.042 (1.06mm)	.120 (3.05mm)	.158 (4.01mm)
120°	114°	114°	114°	114°	84°
C215 (5.46mm)	C228 (5.79mm)	C230 (5.84mm)	C245 (6.22mm)	W245 (6.22mm)	V500 (12.7mm)
.055 or .062 (1.40mm or 1.57mm)	.055 (1.40mm)	.093 (2.36mm)	.055 or .062 (1.40mm or 1.57mm)	.062 (1.57mm)	.118 (3.0mm)
.042 (1.06mm)	.043 (1.09mm)	.042 (1.06mm)	.042 (1.06mm)	.120 (3.05mm)	.158 (4.01mm)
124°	120°	120°	120°	120°	106°
C215 (5.46mm)	C228 (5.79mm)	C230 (5.84mm)	C245 (6.22mm)	W245 (6.22mm)	V500 (12.7mm)
.055 or .062 (1.40mm or 1.57mm)	.055 (1.40mm)	.093 (2.36mm)	.055 or .062 (1.40mm or 1.57mm)	.062 (1.57mm)	.118 (3.0mm)
.042 (1.06mm)	.043 (1.09mm)	.042 (1.06mm)	.042 (1.06mm)	.120 (3.05mm)	.158 (4.01mm)
134°	128°	128°	128°	128°	114°
C215 (5.46mm)	C228 (5.79mm)	C230 (5.84mm)	C245 (6.22mm)	W245 (6.22mm)	V500 (12.7mm)
.055 or .062 (1.40mm or 1.57mm)	.055 (1.40mm)	.093 (2.36mm)	.055 or .062 (1.40mm or 1.57mm)	.062 (1.57mm)	.118 (3.0mm)
.042 (1.06mm)	.043 (1.09mm)	.042 (1.06mm)	.042 (1.06mm)	.120 (3.05mm)	.158 (4.01mm)
145°	140°	140°	140°	140°	134°
C215 (5.46mm)	C228 (5.79mm)	C230 (5.84mm)	C245 (6.22mm)	W245 (6.22mm)	V500 (12.7mm)
.055 or .062 (1.40mm or 1.57mm)	.055 (1.40mm)	.093 (2.36mm)	.055 or .062 (1.40mm or 1.57mm)	.062 (1.57mm)	.118 (3.0mm)
.042 (1.06mm)	.043 (1.09mm)	.042 (1.06mm)	.042 (1.06mm)	.120 (3.05mm)	.158 (4.01mm)
152°	145°	145°	145°	145°	140°
C215 (5.46mm)	C228 (5.79mm)	C230 (5.84mm)	C245 (6.22mm)	W245 (6.22mm)	V500 (12.7mm)
.055 or .062 (1.40mm or 1.57mm)	.055 (1.40mm)	.093 (2.36mm)	.055 or.062 (1.40mm or 1.57mm)	.062 (1.57mm)	.118 (3.0mm)
.042 (1.06mm)	.043 (1.09mm)	.042 (1.06mm)	.042 (1.06mm)	.120 (3.05mm)	.158 (4.01mm)
154°	152°	152°	152°	152°	145°
C215 (5.46mm)	C228 (5.79mm)	C230 (5.84mm)	C245 (6.22mm)	W245 (6.22mm)	V500 (12.7mm)
.055 or .062 (1.40mm or 1.57mm)	.055 (1.40mm)	.093 (2.36mm)	.055 or .062 (1.40mm or 1.57mm)	.062 (1.57mm)	.118 (3.0mm)
.042 (1.06mm)	.043 (1.09mm)	.042 (1.06mm)	.042 (1.06mm)	.120 (3.05mm)	.158 (4.01mm)
160°	154°	154°	154°	154°	152°
	C228 (5.79mm)	C230 (5.84mm)	C245 (6.22mm)	W245 (6.22mm)	V500 (12.7mm)
	.055 (1.40mm)	.093 (2.36mm)	.055 or .062 (1.40mm or 1.57mm)	.062 (1.57mm)	.118 (3.0mm)
	.042 (1.09mm)	.042 (1.06mm)	.042 (1.06mm)	.120 (3.05mm)	.158 (4.01mm)
	154°	154°	154°	154°	152°